Workshop on IoT session 1

Introduction to IoT and Python

## Exercise 1:

* Write a program that calculates and prints the Fibonacci numbers up to 20 iterations.   
  The Fibonacci numbers are calculated as follows:  
  F[0] = 0  
  F[1] = 1  
  F[n] = F[n-1] + F[n-2]
* Modify your program to get the number of iterations from a command line parameter:

*fibonacci.py 20* will calculate and print the same numbers as the exercise above

## Exercise 2:

Write a program that checks if a number is a prime number. It will either print that it found a prime number or give a valid divisor. Get the number to be tested again from the command line argument as in exercise 1

## Exercise 3:

Modify the above programs into functions that can be called from a main program and write this main program into the same file (Test if \_\_name\_\_ is “\_\_main\_\_” to be able to run the program).

Then write a main program in a separate file and import the *module* into your main program. Call the function in the module

Do the same thing for the prime example

## Exercise 4:

Add a module with a function calculating the factorial of a number:

factorial(n) = 1\*2\*3\*4… \*n

## Exercise 5:

Finally put the fibonacci, the factorial and the prime module into a packet. How do you have to import and call the functions now? If the number if iterations is smaller than 1, raise a ValueError

## Exercise 6:

Convert the packet with the 3 math functions into a class with the methods:

* prime
* fibonacci
* factorial

How do you call the functions now?

## Exercise 7:

Write a callback function printing “Hello” and a program with an endless main loop which calls the callback function once every 2 s.